DATE REQUESTED BY | DATE RECEIVED BY | BY 998145-5

ASSIGNED TO		STATINTL	DATE ASSIGNED BY Rod 13 Jan 65	DUE DATE
PROJECT ACT			DUE DATE	DATE COMPL / % COMPL

(1) Test & evaluate the 2 prototype Richardson Viewers, the NRI Vanscan Viewer, and the NRI Reader. 13 Jan 65

(2) Prepare a report comparing the various viewer functions (as compared to the measurement function of the reader) and outline the test features of each machine

CONTRACTOR none		CONTRACT NO	TYPE
CONSIGNEE P&DS		CLASSIFICATION	TOTAL COST
PROPOSAL RECEIVED	STAFF STUDY COMPLETED	SENT TO TDC	TDC ACTION
EX DIR APPROVAL	CONTRACT DATE	ESTIMATED COMPLETION Feb 2	COMPLETION DATE
STATINTL ITOR	PROJECT TITLE		

NPIC FM-304 (1 64)

STATINTL

EQUIPMENT PERFORMANCE TEST

[redacted] Rear Proj Multi format Viewer (AMS)
Manufacturer Model & Type

Prod Prot Burlington Mass 9-10 Feb 65
Serial Nr Site of Test Date

I. GENERAL INSPECTION:
Test personnel shall be thoroughly familiar with applicable specifications, and items not specifically noted in this schedule shall be checked and discrepancies noted. Make a general inspection of the unit paying particular attention to workmanship and general appearance. Check interior and exterior surfaces, electrical wiring, transports, control panel, etc., for compliance with specifications. Make comments below:

II. PROJECTION SYSTEM TEST:
For the following tests, measure and record the test conditions at the time of the test:

Line voltage (at lamp) ~~118~~ 117 VAC

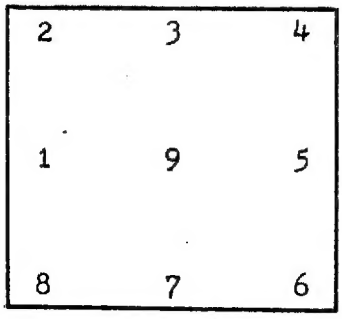
Temperature 65 wet 78 dry °F

Relative Humidity 48 %

A. Light Test

1. With an open film gate and the brilliance control at maximum, take light intensity readings with a calibrated Photometer at the points indicated by the sketch below (points 1 thru 9) for each of the magnification ranges:

Polacoat 15 screen



Polacoat LS60G

	3 X		6 X		12 X		30 X		
	unknown screen								
1	130 111	72	62 51	38	27.8 21.8	16	24.8	14.5	19.7
2	116 88	70	56 44	32.2	27.5 19.5	17.2	25.2	15.7	17.7
3	117 94	72	66 48	42.7	31.2 21.6	19.3	27.9	17	19.3
4	114 97	63	62 45	36.3	33.8 20.8	18.7	30.0	16.7	18.5
5	121 98	63	69 53	39	33.1 23	17.5	30.1	15.4	21.2
6	125 113	60	74 68	38.4	34.8 29.5	17.2	31.6	14.7	25.8
7	136 140	69	75 76	41.3	33.0 31	17.2	30.0	14.8	28.2
8	132 132	71	67 69	37.6	28.8 26.5	15.1	26.4	14	25.8
9	145 114	82	84 61	49.4	35.6 24.5	20.5	31.3	17.2	23.5

Can't traverse to extreme

2. In all magnification ranges, traverse to both extremes and check for evidence of color fringing over the entire screen. Make comments below as to the degree of color fringing, if any, and in which magnification range(s).

There ~~is~~/is not evidence of color fringing on the screen.

3. In all magnification ranges, check for evidence of "hot spots" over the entire screen. Make comments below as to the degree of hot spotting and in which magnification range, if any.

There ~~is~~/is not evidence of "hot spotting" on the screen. With cardboard shields in place, no problem. Were not able to traverse to full extreme but it appears there'll be no problem with shields.

time change Magnification - 2 -

3-6 - 13 sec
6-12 - 13 sec
12-30 - 13 sec

30-3 = 13 sec
3-12 = 12 sec

B. MAGNIFICATION & DISTORTION TEST

1. Place a calibrated grid of approximately 0.2" spacing in the film gate and clamp. Determine the length that each side of the projected grids should be by multiplying the actual grid spacing by the magnification range as engraved on the selector buttons, and record in the space below. Make 16 random measurements of the projected grid lines, 4 in each quadrant, in each magnification range. Half of these measurements should be in the X direction and half in the Y direction; record measurements below.

Calibrated grid of 5 mm spacing.

Grid lines at ___X _____

Grid lines at ___X _____

Grid lines at ___X _____

Grid lines at ___X _____

IV	I
III	II

2. Measurements: al mm

	3 X	6 X	12 X	30 X
Quad I	15.7 X 15.7 X 15.7 Y 15.7 Y	X = 30- X = 30- Y = 30- Y = 30-	X = 59- X = 59 Y = 59- Y = 59-	X 149 Y 149-
Quad II	X = 15.7 X = 15.7 Y = 15.7 Y = 15.7	X = 30- X = 30- Y = 30- Y = 30-	X = 59 X = 59- Y = 59- Y = 59-	X 149- Y 149-

	3X	6X	12X	30X
Quad III	X = 15.7 X = 15.7 Y = 15.7 Y = 15.7	X = 30- X = 30- Y = ~~30~~ 30- Y = 30-	X = 59- X = 59- Y = 59- Y = 59-	X = 149- Y = 149-
Quad IV	X = 15.7 X = 15.7 Y = 15.7 Y = 15.7	X = 30- X = 30- Y = 30- Y = 30-	X = 59 X = 59- Y = 59- Y = 59-	X = 149- Y = 149-

3. Magnification: Compare the average of the projected grid line measurements with the "Grid lines at ____X" length (determined in B.1. above) to determine conformance with magnification specifications.

Does/~~Does not~~ conform with magnification specifications in all X, ____X, ____X, ____X.

4. Distortion: Compare the projected grid line measurements with the "Grid lines at ____X" length (determined in B.1. above) to determine conformance with distortion specifications.

Does/~~Does not~~ conform with distortion specifications in all X, ____X, ____X, ____X.

5. As a final distortion test, make a visual check of the entire screen to determine the presence of any distortions not discovered in performing the above tests, i. e., curved grid lines, wavy grid lines, etc. Make comments below: Very good - no apparent distortions.

B. RESOLUTION TEST

1. Place a Standard High Contrast Air Force Resolution Target in the film gate and apply clamping. Make 5 readings of the minimum readable targets at each magnification setting, one in each quadrant and one at screen center, record readings below:

	Cntr	I	II	III	IV
3 X	40.32	~~40.32~~ 35.84	35.84	32	40.32
6 X	57.28	57.28	40.32	57.28	57.28
12 X	101.76	101.76	101.76	101.76	101.76
30 X	229.12	229.12	~~229.12~~ 229.12	229.12	229.12

2. The brilliance control should be left in the maximum position throughout the entire test - preferably for at least 8 hours without shut-off during breaks in the test schedule. Test should start with a new lamp and should burn-out occur, record the time on the lamps used for the test. At the end of the test, check all optical elements for heat damage - check lamps for bulges and swelling.

III. FILM TRANSPORT TEST

A. Film Degradation Test: Load a roll of 9½" standard base film which is free from any scratches or gouges, i. e., straight from the photo lab and in new condition. Scan and slew in both directions 60 times (30 times each way) with frequent stops and starts within a 10 to 20 foot marked segment of the film. Check this segment of film at the highest magnification for evidence of degradation.

The film is/is not appreciably degraded - make statement below as to seriousness of degradation, if any.

B. Film Drive Test

Load a full 8" diameter reel of standard or thin base film and scan or slew throughout the entire length. Also, scan and slew back and forth several times at or near each end of the film to determine that operation of the film drive is in accordance with Film Drive Specifications.

The unit ~~will~~/will not satisfactorily "handle" full reels of film throughout the entire length. Make comments below: Sporadic and jerky image motion thru out roll even at 3x. Worse at end of reel while scanning Toward empty reel. ~~Rollerless rollers will not accept splice this size 4/2~~

2. Time the movement of a known length of film (15' or so) scanning at the slowest possible speed and at the highest magnification. Record the speed below. Repeat the test for the fastest scan speed and record the speed below. While in the slow scan speed, check for noticeable jerking or sporadic movements of the projected image. Slew an entire roll of film from one side to the other and record elapsed time below.

Slowest scan 0.18 inches per second 65 sec 12 inch (9½)

Fastest scan 1.09 inches per second 11 sec 12 inch (9½)

(All St'd film) Slew _____* film 1' 17" minutes/seconds

There is/~~is not~~ noticeable jerking or sporadic movement of the projected image at the highest magnification. Comments: Considerable sporadic image motion and jerky image motion ~~at~~ discernable at even lowest magnification. Considerable "looping" of film at direction change. Film coasts 3 full frames at stop.

3. Repeat the test in paragraph 1 above using 9½" Thin Base film. Same as above. A splice in thin base film will not negotiate the rollerless rollers without malfunction and/or tearing. No apparent change necessary in torque adjust from St'd base.

4. Repeat the test in paragraph 1 above using 70mm St'd film. Requires an adjustment of the torque - present system is screwdriver adjustment on electronic chassis.

IV. GENERAL OPERATION: While performing the above tests, all controls and operations should be thoroughly exercised and controls should be placed in every conceivable combination to check safety interlocks in the equipment. Make statements below as to proper operation of all functions.

A. Lateral Drive. (Extreme to opposite extreme, __*__ seconds) Much too fast at 30x - coasts to a stop. Joy stick very stiff and hard to actuate.

B. Film Motion Control. A little too loose and easy to move - other than that, feels good. Slips into slew little too easily should require more travel after meeting the resistance before micro switch trips. Slew coasts to a stop - 3 frames

C. Magnification Selection. (Elapsed time for ~~worse~~ all changes, 13 secs) Brand x type illuminated push buttons, fairly high intensity

D. Illumination Control. Variac hooked up for line voltage at max. Better to hook up to get 135V at max with red area from 115 to max.

* Can't test - [illegible]

E. Fine Focus. Agonizingly slow all mag ranges – automatically changes rate with mag selection (good idea)

F. Scan/Slew Mode Selection. Similar to Itek QRC176 - on joy stick A variac controls slew speed from off to max (good)

G. Other. (List controls tested and make comments)

ROTATION - reversed from knob direction. Hangs up if stopped, reverse direction for a few degrees and then will continue in former direction - both directions. Rotates "exactly" 180°. Has continuously variable speed of rotation. Has auto centering.
from center to extreme manual - 19 sec
" extreme to center auto - 19 sec

V. GENERAL: Personnel conducting tests should note below any comments regarding opinions on workmanship, machine suitability to the mission, machine strengths, machine weaknesses, etc. Make a lamp change and comment on the ease/difficulty of this operation.

a. The unit has a fan blowing directly on the film plane and the anemothern heat test would probably not be conclusive. A 3.0 density film was placed in the light path at 30× for one hours. Very little deformation was noted while in the light and the film was completely undistorted after a few seconds.

Tests performed by: _____ _____
Name Title

_____ _____
Mailing Address Telephone

Rotation -

Direction reversed — "hangs" up if stopped, reverse the direction for a few degrees and then continue in former direction it will move. True in both directions - may be lack of sufficient starting torque.

Stage rotates "exactly" 180° in each direction - should be in neighborhood of 190° or so.

Continuously variable (speed) of stage rotation. (GOOD)

Slew

Going into slew similar to 70 mm [redacted] STATINTL - speed control control variable with rotating knob control.

Upon going from slew to neutral on joy stick, film "coasts" 3 frames before stopping.

(9½") Significant "looping of film on stopping and starting slew mode.

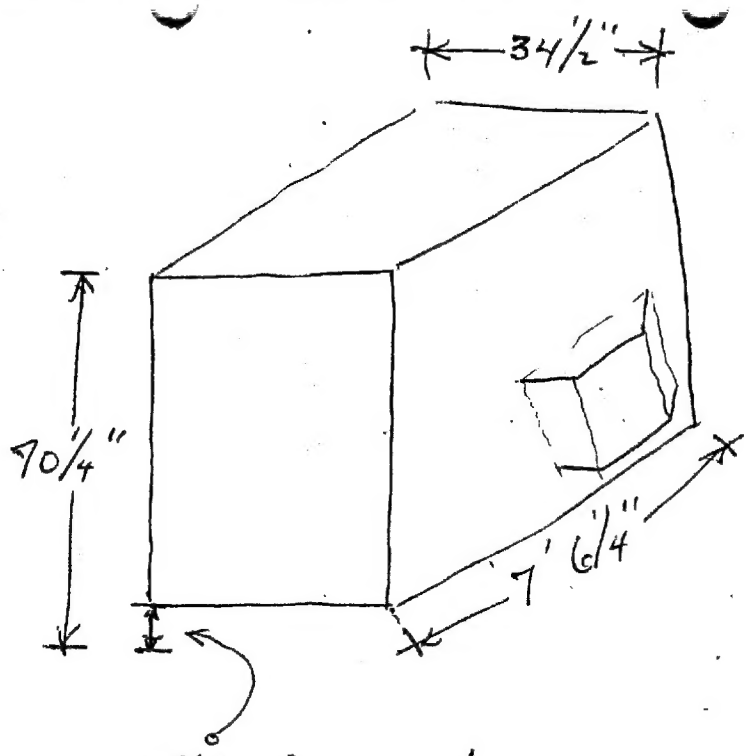
Scan (9½") Sporadic and jerky image motion - bad -. Caused by "noisey" servo amps AND film riding on platen (static). Worse at the end of a roll while scanning toward empty spool.

Same on other end

STATINTL [redacted] says that they are sure this can be "tuned" out.

Rollerless rollers will not accept spliced thin base 9½" film without malfunction

70 mm - very jerky image at 12X worse at 30X naturally



4'-¼" including "bay window"

5⅞" clear when on wheels.

5" castered wheels

Screen size
30½" × 30½"
¼" covered by rubber gasket all around

30 × 30 clear